

DOCUMENT RESUME

ED 294 671

PS 017 346

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TITLE Improving Preschoolers' Recognition Memory for Faces with Orienting Information.
PUB DATE Aug 87
NOTE 11p.; Paper presented at the Annual Meeting of the American Psychological Association (New York, NY, August 28 - September 1, 1987). The research was supported by a Barenholtz Research Grant.
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Ability; *Memory; *Performance Factors; *Preschool Children; Preschool Education; *Visual Stimuli
IDENTIFIERS Developmental Patterns; *Familiarity; *Orienting Information

ABSTRACT

To determine whether preschool children's memory for unfamiliar faces could be facilitated by giving them orienting information about faces, 4- and 5-year-old subjects were told that they were going to play a guessing game in which they would be looking at faces and guessing which ones they had seen before. In study 1, 6 boys and 6 girls within each of the 2 age groups served as subjects and viewed photographs of women. Faces were randomly divided into 6 sets of 3 faces each; 3 sets were of target faces and 3 of other faces. Each set of 3 target faces was paired with 1 of 3 types of information in the experimental task: name, behavior, or no information. Study 2 was identical to 1 in method, except that: (1) male faces were used; (2) the no information condition was replaced with an additional name information condition using 6 target faces; and (3) the amount of information provided in the behavior condition was decreased. It was concluded that the findings supported the claim that young children lack efficient strategies for processing facial information, and that preschoolers' difficulties in remembering unfamiliar faces must involve limitations in several cognitive capacities. (RH)

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IMPROVING PRESCHOOLERS' RECOGNITION MEMORY FOR FACES WITH ORIENTING
INFORMATION

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POSTER PRESENTED AT THE 95TH MEETING OF THE AMERICAN PSYCHOLOGICAL
ASSOCIATION, NEW YORK, NY, AUGUST, 1987.

THIS RESEARCH WAS SUPPORTED BY A BARENHOLTZ RESEARCH GRANT AWARDED TO THE
AUTHOR WHILE SHE WAS A FACULTY MEMBER IN THE PSYCHOLOGY DEPARTMENT AT
WELLESLEY COLLEGE. CORRESPONDENCE REGARDING THIS RESEARCH MAY BE ADDRESSED TO
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OVERVIEW

DEVELOPMENTAL RESEARCH HAS INDICATED THAT PRESCHOOL CHILDREN ARE MARKEDLY LESS PROFICIENT AT REMEMBERING UNFAMILIAR FACES THAN ARE OLDER CHILDREN. IT HAS BEEN SUGGESTED THAT PRESCHOOLERS' POORER RECOGNITION MEMORY MAY REFLECT INEFFICIENT ENCODING STRATEGIES, HOWEVER, LITTLE RESEARCH HAS FOCUSED ON THIS ISSUE (CAREY, 1981). THE GOAL OF THIS RESEARCH WAS TO DETERMINE IF PRESCHOOLERS' MEMORY FOR UNFAMILIAR FACES COULD BE FACILITATED BY GIVING THEM ORIENTING INFORMATION ABOUT FACES. THIS STRATEGY WAS EMPLOYED BECAUSE IT HAS BEEN SHOWN THAT ORIENTING TASKS PRODUCE MORE EFFICIENT PROCESSING OF FACIAL INFORMATION IN OLDER CHILDREN (BLANEY & WINOGRAD, 1978). TO ACHIEVE THE FOREGOING GOAL, PRESCHOOLERS VIEWED UNFAMILIAR TARGET FACES PAIRED WITH EITHER NAME, BEHAVIOR, OR NO INFORMATION. CHILDREN'S RECOGNITION MEMORY WAS THEN ASSESSED USING A PAIRED-COMPARISONS PROCEDURE IN WHICH EACH TARGET FACE WAS PAIRED WITH ANOTHER UNFAMILIAR FACE AND CHILDREN WERE ASKED TO POINT TO THE FACE IN EACH PAIR THEY HAD SEEN BEFORE. OVERALL, NAME AND BEHAVIOR INFORMATION PRODUCED BETTER MEMORY FOR FACES THAN NO INFORMATION. IN ADDITION, ORIENTING INFORMATION FACILITATED MEMORY FOR 3 FACES BUT NOT FOR 6 FACES. IN DEMONSTRATING THAT ORIENTING INFORMATION IMPROVES PRESCHOOLERS' RECOGNITION MEMORY FOR UNFAMILIAR FACES, THIS RESEARCH SUPPORTS THE NOTION THAT YOUNG CHILDREN LACK EFFICIENT STRATEGIES FOR ENCODING UNFAMILIAR FACES. ALSO, THE FINDING THAT THE FACILITATING EFFECTS OF ORIENTING INFORMATION DEPEND ON THE NUMBER OF FACES TO BE REMEMBER INDICATES THAT YOUNG CHILDREN'S INABILITY TO REMEMBER UNFAMILIAR FACES INVOLVES LIMITATIONS IN SEVERAL COGNITIVE CAPACITIES.

STUDY 1

METHOD

SUBJECTS

SIX BOYS AND 6 GIRLS WITHIN EACH OF TWO AGE GROUPS (4 YEAR OLDS, M AGE = 4.1 YEARS; AND 5 YEAR OLDS, M AGE = 5.03 YEARS) SERVED AS SUBJECTS.

STIMULUS FACES

EIGHTEEN 3 X 5 INCH GLOSSY, COLORED, HEAD AND SHOULDER PHOTOGRAPHS OF DIFFERENT WOMEN TAKEN FROM A COLLEGE YEARBOOK WERE USED IN THE EXPERIMENTAL TASK. THE FACES WERE RANDOMLY DIVIDED INTO 6 SETS OF 3 FACES -- 3 SETS OF TARGET FACES AND 3 SETS OF OTHER FACES.

ORIENTING INFORMATION

EACH SET OF 3 TARGET FACES WAS PAIRED WITH ONE OF 3 TYPES OF INFORMATION IN THE EXPERIMENTAL TASK -- NAME, BEHAVIOR, OR NO INFORMATION. IN THE NAME INFORMATION CONDITION, CHILDREN WERE TOLD THAT EACH PERSON'S NAME WAS BETTY. IN THE BEHAVIOR INFORMATION CONDITION, CHILDREN WERE TOLD THAT EACH PERSON WAS A NICE PERSON WHO LIKED TO PLAY GAMES WITH CHILDREN. IN THE NO INFORMATION CONDITION, CHILDREN WERE TOLD NOTHING ABOUT THE FACES OTHER THAN TO LOOK CAREFULLY AT EACH FACE.

PROCEDURE

CHILDREN WERE TOLD THAT THEY WERE GOING TO PLAY A GUESSING GAME IN WHICH THEY WOULD BE LOOKING AT FACES AND GUESSING WHICH ONES THEY HAD SEEN BEFORE BY POINTING TO THE FACES. AFTER THE TASK WAS EXPLAINED, THE EXPERIMENTER RANDOMLY SELECTED A TARGET FACE FROM AN ENVELOPE AND MOUNTED IT ON A BOARD. AS SHE DID SO, SHE PROVIDED THE CHILD EITHER WITH NAME, BEHAVIOR, OR NO INFORMATION ABOUT THE FACE. FOR EXAMPLE, IN THE NAME INFORMATION CONDITION, THE EXPERIMENTER PRESENTED A TARGET FACE AND SAID, "THIS PERSON'S NAME IS BETTY". SHE THEN PRESENTED A SECOND FACE AND SAID "THIS PERSON'S NAME IS ALSO BETTY" . FINALLY, SHE PRESENTED A THIRD FACE AND SAID "THIS PERSON'S NAME IS BETTY TOO". WHEN ALL OF THE TARGET FACES WERE MOUNTED, THE CHILD WAS ASKED TO POINT TO EACH FACE AND REPEAT THE PERSON'S NAME TO INSURE THAT THE ORIENTING INFORMATION WAS UNDERSTOOD. AFTER THE FACES WERE REVIEWED, THE EXPERIMENTER REMOVED THEM AND RANDOMLY SELECTED ONE TARGET FACE AND MOUNTED IT NEXT TO ANOTHER RANDOMLY SELECTED UNFAMILIAR FACE. THE CHILD WAS THEN ASKED TO POINT TO "BETTY" IN THE FACE PAIR. THE FIRST FACE PAIR WAS THEN REMOVED AND A SECOND ONE WAS PRESENTED. AFTER THE CHILD IDENTIFIED "BETTY" IN THE SECOND PAIR, IT WAS REMOVED AND THE THIRD PAIR WAS PRESENTED. A SECOND EXPERIMENTER CODED THE CHILD'S RESPONSES. THE ORDER OF ORIENTING INFORMATION WAS COUNTERBALANCED ACROSS SUBJECTS AS WAS THE LEFT-RIGHT PLACEMENT OF TARGET AND OTHER FACES.

THE PROCEDURE FOR PRESENTING TARGET FACES WAS THE SAME IN THE BEHAVIOR CONDITION WITH THE EXCEPTION THAT BEHAVIOR RATHER THAN NAME INFORMATION WAS PAIRED WITH A DIFFERENT SET OF 3 TARGET FACES. WHEN ALL TARGET FACES WERE MOUNTED, THE CHILD WAS ASKED TO REPEAT WHAT THE PERSON LIKED TO DO. DURING THE IDENTIFICATION TASK, THE CHILD WAS ASKED TO POINT TO THE "NICE" PERSON. IN THE CONTROL CONDITION, THE CHILD WAS ALLOWED TO REVIEW EACH FACE AFTER ALL 3 FACES HAD BEEN PRESENTED AND THE EXPERIMENTER POINTED TO EACH FACE AS THE CHILD DID SO TO INSURE THAT THE CHILD WAS ATTENDING TO THE FACES. DURING THE IDENTIFICATION TASK, THE CHILD WAS ASKED TO POINT TO THE PICTURE THAT WAS SEEN BEFORE.

RESULTS

PRELIMINARY ANALYSES OF VARIANCE FOR REPEATED MEASURES INDICATED THAT CHILDREN'S MEAN NUMBER OF CORRECT IDENTIFICATIONS DID NOT DIFFER BY AGE GROUP. THUS, THE DATA WERE COLLAPSED ACROSS CHILDREN'S AGE GROUP FOR SUBSEQUENT ANALYSES. ONE-WAY ANALYSIS OF VARIANCE AND POST-HOC TESTS INDICATED THAT CHILDREN MADE MORE CORRECT IDENTIFICATIONS WHEN GIVEN NAME THAN WHEN GIVEN NO INFORMATION. THE MEAN NUMBER OF CORRECT IDENTIFICATIONS MADE IN THE NAME CONDITION DID NOT DIFFER SIGNIFICANTLY FROM THOSE MADE IN THE BEHAVIOR CONDITION, HOWEVER, CHILDREN'S PERFORMANCE IN THE NAME CONDITION EXCEEDED CHANCE LEVEL BY A MUCH GREATER MARGIN THAN DID THEIR PERFORMANCE IN THE BEHAVIOR CONDITION. FINALLY, CHILDREN'S MEAN NUMBER OF CORRECT IDENTIFICATIONS IN THE NO INFORMATION CONDITION DID NOT DIFFER FROM CHANCE, ALTHOUGH THIS NUMBER WAS NOT SIGNIFICANTLY LESS THAN THAT FOUND IN THE BEHAVIOR INFORMATION CONDITION (SEE TABLE 1).

STUDY 2

STUDY 2 FURTHER EXAMINED THE IMPACT OF ORIENTING INFORMATION ON PRESCHOOLERS' RECOGNITION MEMORY FOR UNFAMILIAR FACES. THE METHODOLOGY EMPLOYED IN STUDY 2 WAS IDENTICAL TO THAT OF STUDY 1 WITH THREE EXCEPTIONS. FIRST, MALE RATHER THAN FEMALE FACES WERE USED. SECOND, THE NO INFORMATION CONDITION WAS REPLACED WITH AN ADDITIONAL NAME INFORMATION CONDITION USING 6 TARGET FACES TO SEE IF THE FACILITATING IMPACT OF NAME INFORMATION FOUND IN STUDY 1 HELD TRUE FOR A LARGER FACE SET SIZE. IN THE NAME INFORMATION CONDITION WITH 3 FACES, THE TARGET FACES WERE NAMED BILLY. IN THE NAME INFORMATION CONDITION WITH 6 FACES, THE TARGET FACES WERE NAMED BOBBY. A FINAL DIFFERENCE BETWEEN STUDY 1 AND STUDY 2 WAS THAT IN STUDY 2 CHILDREN WERE TOLD ONLY THAT EACH TARGET PERSON WAS A NICE PERSON. THIS WAS DONE TO ASSESS THE POSSIBILITY THAT THE BEHAVIOR INFORMATION CONDITION PRODUCED FEWER CORRECT IDENTIFICATIONS COMPARED TO CHANCE THAN THE NAME INFORMATION CONDITION IN STUDY 1 BECAUSE OF DIFFERENCES IN THE AMOUNT OF INFORMATION PROVIDED ABOUT THE TARGET FACES. THE SAME CHILDREN PARTICIPATED IN STUDY 2 APPROXIMATELY ONE WEEK FOLLOWING THEIR PARTICIPATION IN STUDY 1.

RESULTS

CONSISTENT WITH THE RESULTS OF STUDY 1, CHILDREN'S MEAN NUMBER OF CORRECT IDENTIFICATIONS DID NOT DIFFER BY AGE GROUP. CONTRARY TO THE EFFECTS FOR NAME INFORMATION FOUND IN STUDY 1, CHILDREN PERFORMED AT CHANCE LEVEL IN IDENTIFYING 3 FACES PAIRED WITH NAME INFORMATION. A SIMILAR EFFECT WAS FOUND WHEN 6 FACES WERE PAIRED WITH NAME INFORMATION. HOWEVER, CHILDREN WHO MADE JUDGMENTS ABOUT 3 FACES PAIRED WITH NAME INFORMATION BEFORE MAKING JUDGMENTS ABOUT 6 FACES PAIRED WITH NAME INFORMATION PERFORMED AT BETTER THAN CHANCE LEVEL IN IDENTIFYING TARGET FACES, AS FOUND IN STUDY 1 ($\bar{X} = 2.19$, $t(15) = 2.55$, $p < .05$). CHILDREN PERFORMED AT BETTER THAN CHANCE LEVEL IN IDENTIFYING FACES PAIRED WITH BEHAVIOR INFORMATION, AS THEY DID IN STUDY 1, AND THEIR MEAN NUMBER OF CORRECT IDENTIFICATIONS WAS THE SAME AS THAT FOUND FOR CHILDREN WHO MADE JUDGMENTS ABOUT 3 FACES PAIRED WITH NAME INFORMATION BEFORE MAKING JUDGMENTS ABOUT 6 FACES (SEE TABLE 2).

CONCLUSIONS

IN DEMONSTRATING THAT PRESCHOOLERS' RECOGNITION MEMORY FOR UNFAMILIAR FACES IMPROVES WHEN FACES ARE PAIRED WITH NAME OR BEHAVIOR INFORMATION, THE PRESENT RESEARCH SUPPORTS THE CLAIM THAT YOUNG CHILDREN LACK EFFICIENT STRATEGIES FOR PROCESSING FACIAL INFORMATION. AT THE SAME TIME, IN SHOWING THAT THE FACILITATING IMPACT OF ORIENTING INFORMATION IS LIMITED TO SMALL FACE SET SIZES THE PRESENT RESEARCH SUGGESTS THAT PRESCHOOLERS' DIFFICULTIES IN REMEMBERING UNFAMILIAR FACES MUST INVOLVE LIMITATIONS IN SEVERAL COGNITIVE CAPACITIES.

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TABLE 1

MEAN NUMBER OF CORRECT RESPONSES WITHIN INFORMATION CONDITIONS IN STUDY 1

	$\bar{X}$	$t(23)$	p
BEHAVIOR INFORMATION	2.13	2.52	< .02
NAME INFORMATION	2.58	9.00	< .001
NO INFORMATION	1.71	.78	> .05

Note. t VALUES REPRESENT COMPARISONS TO A CHANCE LEVEL OF 1.5 OUT OF A TOTAL POSSIBLE OF 3 CORRECT IDENTIFICATIONS.

TABLE 2

MEAN NUMBER OF CORRECT RESPONSES WITHIN INFORMATION CONDITIONS IN STUDY 2

	$\bar{X}$	$t(23)$	p
BEHAVIOR INFORMATION	2.17	3.53	< .01
NAME INFORMATION PAIRED WITH 3 FACES	1.75	1.32	> .05
NAME INFORMATION PAIRED WITH 6 FACES	3.46	2.00	> .05

Note. t VALUES REPRESENT COMPARISONS TO A CHANCE LEVEL OF 1.5 OUT OF 3 POSSIBLE CORRECT IDENTIFICATIONS FOR THE FIRST 2 CONDITIONS AND 3 OUT OF 6 FOR THE THIRD CONDITION.